

FLOOD INSURANCE STUDY

ORIGINAL



COMPLETED

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TOWN OF
DRESDEN, MAINE
LINCOLN COUNTY



MAY 19, 1987



Federal Emergency Management Agency

COMMUNITY NUMBER - 230084

BEST COPY AVAILABLE

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program (NFIP) have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY
TOWN OF DRESDEN, LINCOLN COUNTY, MAINE

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Dresden, Lincoln County, Maine, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were prepared by the U. S. Geological Survey (USGS) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-85-E-1823, Project Order No. 11. This work was completed in January 1986.

1.3 Coordination

In January 1985, an initial Consultation and Coordination Officer's (CCO) meeting was held with representatives from FEMA, the town, and the USGS (the study contractor) to determine the streams to be studied by detailed methods.

In February 1986, flood elevations and flood boundaries were reviewed at an intermediate CCO meeting held with representatives from FEMA, the town, and the study contractor.

On June 19, 1986, a final CCO meeting was held with representatives from FEMA, the town, and the study contractor to review the results of the study.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Dresden, Lincoln County, Maine. The area of study is shown on the Vicinity Map (Figure 1).

The Kennebec River was studied by detailed methods for its entire length within the corporate limits. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through January 1991.

Dresden Bog and Nequasset Brook were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Town of Dresden.

2.2 Community Description

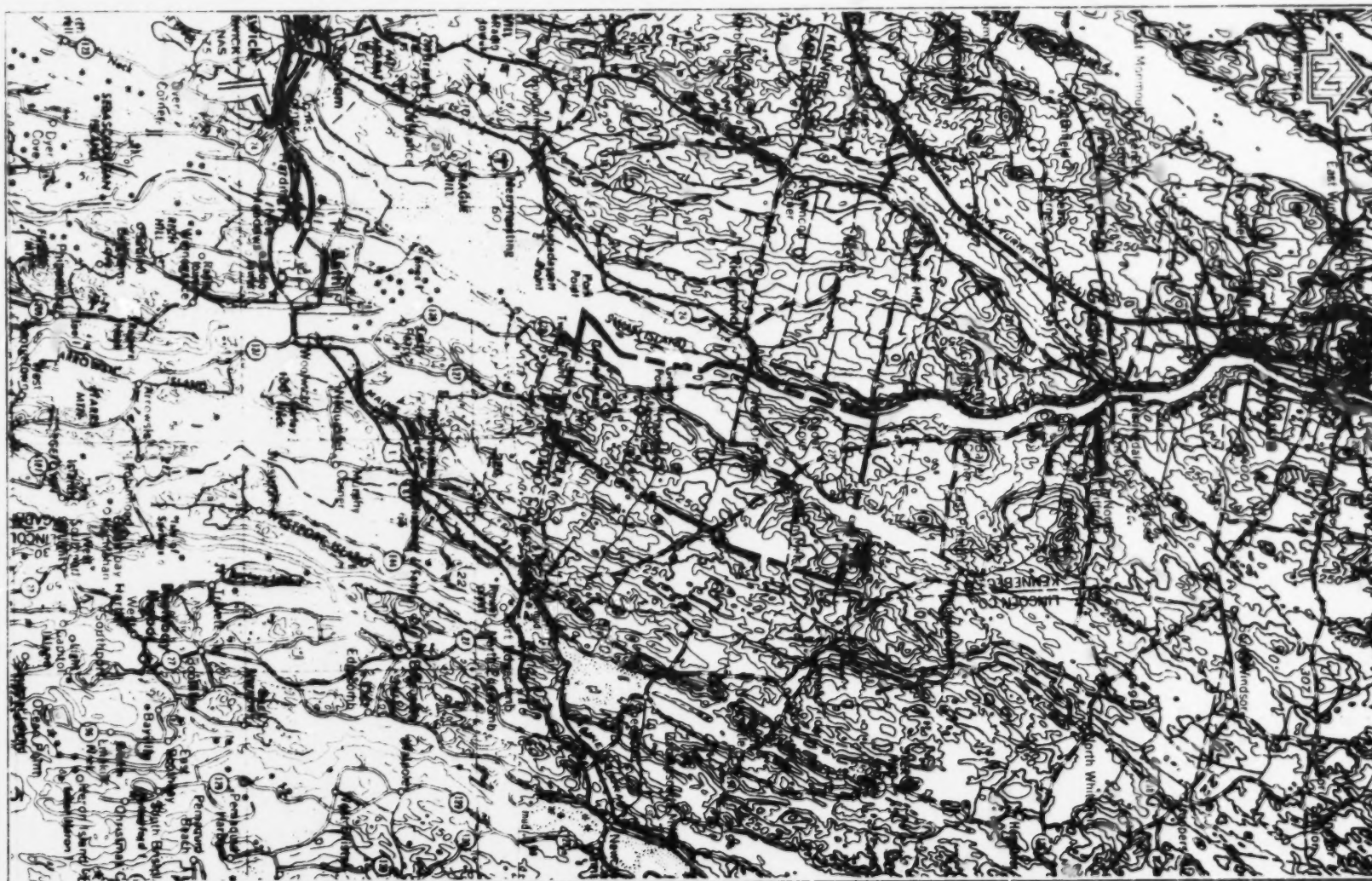
The Town of Dresden is located in western Lincoln County in southern Maine, approximately 26 miles inland from the Atlantic Ocean and approximately 8 miles northwest of the Town of Wiscasset. The town is bounded on the north by the Town of Pittston, on the northwest by the Township of Perkins (also known as the Town of Swan's Island), on the east by the Town of Alna, on the southeast by the Town of Wiscasset, on the south by the Town of Woolwich, on the west by the Town of Bowdoinham, and on the northwest by the Town of Richmond. Dresden had a 1980 population of 998, an increase of 26.8 percent over the 1970 census (Reference 1). The land area of the town is 31.1 square miles, with an average population density of 32 people per square mile.

Eighty-one percent of the town is forest covered, 13 percent is used for agriculture and fields, and 6 percent is developed. These percentages do not include 1.23 square miles of wetland in the town (Reference 2). Dresden is primarily a residential community and many of its inhabitants work outside of the town. Only a limited number of small, privately owned businesses are in the town itself.

The climate of Dresden is typified by moderately cold winters and mild summers. The average-annual temperature is 43.7 degrees Fahrenheit (°F). The mean-annual precipitation is 44.0 inches. Water from snowmelt is usually a significant source of stream flow during the months of March and April.

Snowfall in the Dresden area occurs primarily from November through April. Yearly totals average 77.8 inches in the City of Brunswick and 81.8 inches in the City of Gardiner. Augusta, to the north of Dresden,

FIGURE 1



FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DRESDEN, ME
(LINCOLN CO.)

APPROXIMATE SCALE



VICINITY MAP

has recorded extremes of 106.4 inches in 1955-56, and 29.3 inches in 1952-53 (Reference 3). Snowfall data from the Cities of Brunswick, Gardiner, and Augusta can be considered representative of conditions in Dresden.

The Kennebec River runs 9.0 miles along the western boundary of Dresden. At Dresden, the Kennebec River is a wide, tranquilly flowing estuary with a tidal range of approximately 5 feet. The river has been dredged to a depth ranging from 10 to 20 feet at mean low water. This dredging was last done in 1938.

The Eastern River runs for 9.1 miles through the town to its confluence at the Kennebec River. The entire length of the Eastern River in Dresden is tidal. The Eastern River drains 50 square miles; however, extreme flood events are caused by backwater from the Kennebec River. Near the mouth of the river at low tides, its banks are lined with tidal flats for approximately 2 miles. The river channel depth ranges from approximately 24 feet at the mouth to approximately 6 feet at low tide at the Dresden-Pittston corporate limits.

2.3 Principal Flood Problems

Severe flooding in Dresden is limited to the flood plains of the Kennebec and Eastern Rivers. Flooding on the Eastern River is caused by backwater from the Kennebec River. Flooding generally occurs in the spring months from rapid runoff caused by heavy rains combined with snowmelt. Less frequently, flooding may occur as a result of hurricanes in late summer. Significant flooding has occurred on the Kennebec River in past years; however, since the Kennebec River at Dresden is ungaged, no determination of actual flows for these floods is available. Flood-flow data for the Kennebec River was taken from gage No. 01048500 at Waterville, gage No. 010490000 on the Sebasticook River, and gage No. 01049500 on Cobbosseecontee Stream at Gardiner.

The flood of March 1896 on the Kennebec River washed out part of the Gardiner-Randolph bridge, located upstream from Dresden. During the March 1936 flood, which was the flood of record, the Richmond-Dresden bridge was damaged, and huge ice cakes carried by the flood crushed buildings along the banks. It is estimated that the 1936 flood discharge was slightly less than a 100-year event on the Kennebec River at Dresden (Reference 4).

2.4 Flood Protection Measures

The natural stream flow of the Kennebec River is altered by several hydroelectric plants and storage reservoirs located upstream from Augusta. The structure that has the most pronounced effect on the Kennebec River is the dam at Solon, approximately 90 miles upstream from

Dresden. It is a low-head dam that maintains a discharge of 3,600 cubic feet per second (cfs) at Madison, 14 miles downstream. When inflow at the dam exceeds 4,000 cfs, it no longer controls river discharges. The major storage lakes within the Kennebec River basin and their capacities in billion cubic feet are as follows: Moosehead Lake, 23.7; Indian Pond, 3.2; Flagstaff Lake, 12.0; and Wyman Pond, 2.6. These reservoirs have a dampening influence on peak flows downstream.

The most downstream dam on the Kennebec River is at the upper limit of the tidal influence in Augusta. This low-head dam is operated for power generation and to supply process water for mills. Storage from this dam has little effect on downstream flooding.

The Town of Dresden has adopted the Minimum Shoreland Zoning Ordinance as required by the State of Maine Shoreland Zoning Act. The shorelands located within 250 feet, horizontal distance, of the normal high-water marks of the Kennebec and Eastern Rivers have been zoned to restrict development (Reference 5).

Since 1969, flooding has caused considerable damage along the banks of the Kennebec River, especially nearby in the City of Gardiner. During the past 40 years, the Coast Guard has often been requested to break open the channel in the Kennebec River when the ice cover is thick and flood potential is high. These conditions are most likely to occur in the month of March.

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. A flood event of a magnitude which is expected to be equaled or exceeded once on the average during any 100-year period (recurrence interval) has been selected as having special significance for flood plain management and for flood insurance rates. This event, commonly termed the 100-year flood, has a 1 percent chance of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding source studied in detail affecting the community.

Flood-flow data for the Kennebec River downstream from Waterville were obtained from daily records at the power plant now operated by the Scott Paper Company at Waterville. These furnished records were published by the USGS at gaging station No. 01048500 at Waterville for the period 1892 to 1955. Records of maximum daily flows at this power plant for the period of 1955 to 1977 were obtained from the Scott Paper Company.

Hydrologic analyses for the Kennebec River were carried out using the log-Pearson Type III method to establish the maximum daily mean discharge-frequency relationship for floods of the selected recurrence intervals (Reference 6). The results from the log-Pearson Type III analysis were increased by 10 percent to simulate instantaneous peak flows. The 10 percent increase was based on a comparison of 10 determinations of instantaneous peak flow over the dam with the corresponding daily mean flow. Because of the increase in drainage area on the Kennebec River from Waterville (4,270 square miles) to Dresden (5,900 square miles), further adjustments were required for the peak discharges to be representative in Dresden. Adjustments for the drainage area were made using records from USGS gaging station No. 010490000 on the Sebasticook River and No. 01049500 on Cobbosseecontee Stream at Gardiner.

A summary of drainage area-peak discharge relationships for the Kennebec River is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA</u>	<u>PEAK DISCHARGES (cfs)</u>
	<u>(sq. miles)</u>	<u>100-YEAR</u>
KENNEBEC RIVER		
Downstream of confluence of Eastern River	5,900	184,000
At Pittston-Dresden corporate limits	5.850	183,000

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1) and the Flood Insurance Rate Map (Exhibit 2) where applicable.

Cross-section data for the backwater analyses for the Kennebec River were obtained from USGS topographic maps (Reference 7). The below-water portions of the cross sections were obtained from the nautical chart for the area (Reference 8). The data for the Richmond-Dresden bridge were obtained from plans of the Maine Department of Transportation.

Water-surface elevations of floods of the selected recurrence intervals were computed using the USGS step-backwater computer model (Reference 9). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Starting water-surface elevations were taken from the Town of Bowdoinham Flood Insurance Study (Reference 10). The results of the water-surface elevations are tabulated for selected cross sections (Table 2).

The backwater model was calibrated using profile information available for the 1936 flood (Reference 4). This calibration was possible because river conditions from 1936 to the present, and the structures in the Kennebec River and their alignment, have not changed appreciably.

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were chosen on the basis of maps and field inspection at cross sections in the area studied. Channel "n" values for the Kennebec River ranged from 0.040 to 0.055, and the overbank "n" values ranged from 0.070 to 0.100.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the descriptions of the marks are presented in Elevation Reference Marks (Exhibit 3).

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100-year flood plain boundary to assist communities in developing flood plain management measures.

FLOODING SOURCE		RIVER CHANNEL				BASE FLOOD ELEVATION
CROSS SECTION	DISTANCE ¹ (FT.)	WIDTH ² (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	STREAM-BED ELEVATION FT. (NGVD)	FT. (NGVD)
Woolwich-Dresden Corporate Limit	0	----	----	----	----	11.9
A ³	4,650	2,030	40,000	3.0	-17	12.5
B ³	11,900	4,640	75,300	1.6	-12	13.1
C ³	15,100	3,660	47,300	2.5	-12	13.3
D ³	17,200	2,840	41,200	2.9	-15	13.6
E ³	22,100	1,080	22,400	5.3	-15	14.4
F ³	25,300	1,430	24,600	4.8	-15	15.6
G	28,000	1,820	33,300	5.5	-17	16.8
H	28,300	1,240	35,900	5.1	-18	17.1
I	28,600	1,720	34,800	5.3	-17	17.3
J	31,100	1,460	34,900	5.2	-13	18.6

¹ FEET ABOVE CORPORATE LIMITS² THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS³ FLOOD DATA FOR THE DRESDEN OR LEFT CHANNEL OF THE KENNEBEC RIVER AROUND SWAN ISLAND.

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Town of Dresden, Maine
(Lincoln County)

100-YEAR FLOOD DATA

KENNEBEC RIVER

FLOODING SOURCE		RIVER CHANNEL				BASE FLOOD ELEVATION
CROSS SECTION	DISTANCE ¹ (FT.)	WIDTH ² (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	STREAM-BED ELEVATION FT. (NGVD)	FT. (NGVD)
K	33,600	1,320	37,600	4.9	-12	19.7
L	35,480	1,590	39,900	4.6	-12	20.4
M	38,140	2,050	45,600	4.0	-12	21.3
N	40,130	1,740	41,300	4.4	-10	22.0
O	41,870	1,290	35,600	5.1	-12	22.6
P	43,470	2,800	58,000	3.2	-16	23.1
Q	46,470	2,600	48,100	3.8	-14	23.8
R	47,750	2,730	60,200	3.0	-16	24.4

¹ FEET ABOVE CORPORATE LIMITS² THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

Town of Dresden, Maine
(Lincoln County)

100-YEAR FLOOD DATA

KENNEBEC RIVER

4.1 Flood Plain Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. For the stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (Reference 7).

For the streams studied by approximate methods, the flood plain boundaries were delineated using the Town of Dresden Flood Hazard Boundary Map (Reference 11).

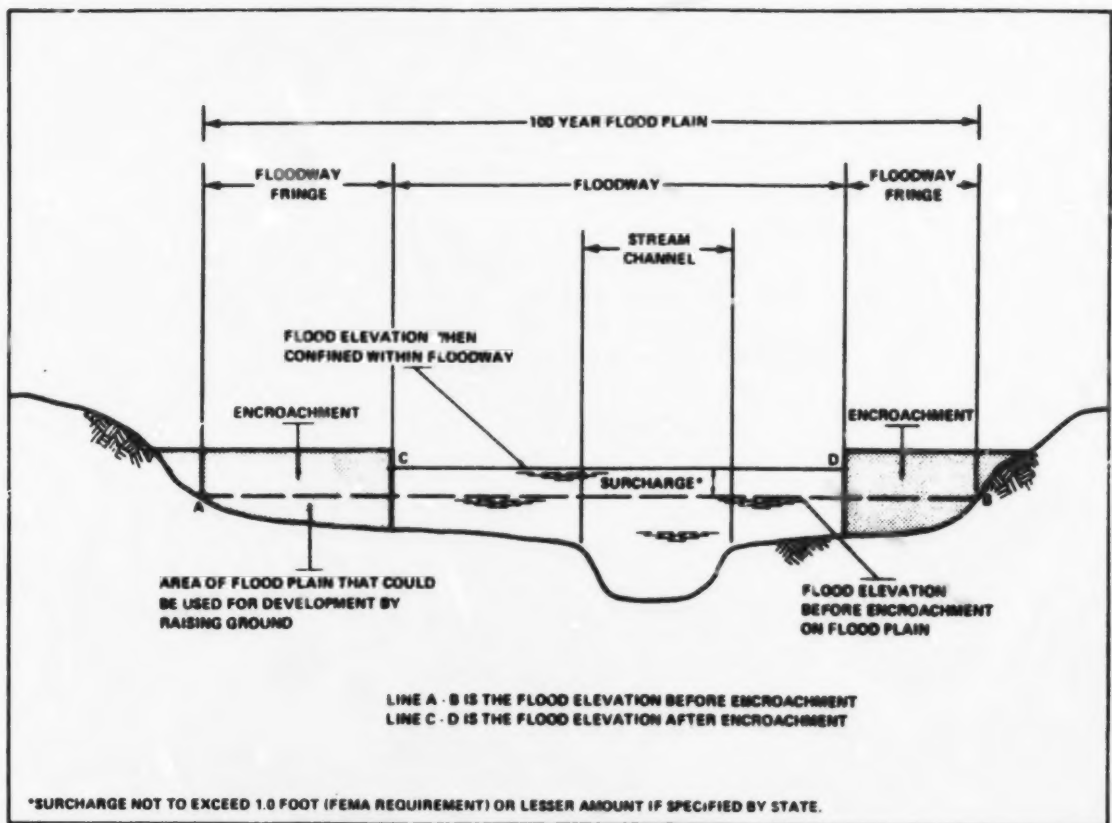
The 100-year flood plain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year flood plain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE). Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

No floodways were calculated as part of this study.



Floodway Schematic - Figure 2

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year flood plains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year flood plains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year flood plain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal flood plains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal flood plains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year flood plain, areas within the 500-year flood plain, and to areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and flood plain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year flood plains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For flood plain management applications, the map shows by tints, screens, and symbols, the 100-year flood plain. The locations of selected cross sections used in the hydraulic analyses are shown where applicable.

7.0 OTHER STUDIES

The Flood Insurance Study for the Town of Bowdoinham is currently being prepared (Reference 10). The results of that study will be in exact agreement with the results of this study.

A Flood Insurance Study for the Town of Pittston has been completed (Reference 12). The results of this study agree with the results of that study.

Due to its more detailed analyses, the results of this study supersede the Flood Hazard Boundary Map for the Town of Dresden (Reference 11).

The COE Special Flood Hazard Information Report for the Kennebec River was compared to the Kennebec River profiles generated for this study (Reference 13). The profiles did not match between studies. The information in this study supersedes the information in that report due to its more detailed analysis.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, J. W. McCormack Post Office and Courthouse Building, Room 462, Boston, Massachusetts 02109.

9.0 BIBLIOGRAPHY AND REFERENCES

1. U. S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Maine, Washington, D. C., U. S. Government Printing Office, 1981.
2. Southern Mid-Coast Regional Planning Commission (dissolved February, 1981), Water Quality Management Plan for the Southern Mid-Coast Region, May 1977, (Unpublished Draft).
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4. U. S. Department of the Interior, Geological Survey, Water-Supply Paper 798, The Floods of March 1936, Washington, D. C., 1937.
5. State of Maine, Guidelines for Municipal Shoreland Zoning Ordinances, Augusta, Maine, December 15, 1973.
6. U. S. Department of the Interior, Geological Survey, Office of Water Data Collection, Interagency Advisory Committee on Water Data, "Guidelines for Determining Flood Flow Frequency," Bulletin 17B, Reston, Virginia, Revised September 1981.
7. U. S. Department of the Interior, Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet: Richmond, Maine, 1975; Wiscasset, Gardiner, 1975; East Bowdoinham, Maine, 1975.
8. U. S. Department of Commerce, National Oceanic and Atmospheric Administration, Nautical Chart, Scale 1:40,000, U. S. East Coast, Maine, Bath to Courthouse Point, Washington, D. C., March 1977.
9. U. S. Department of the Interior, Geological Survey, Bridge Waterways Analysis Model by James O. Shearman and others, Written Communication, Washington, D. C., 1985.
10. Federal Emergency Management Agency, Flood Insurance Study, Town of Bowdoinham, Sagadahoc County, Maine (Unpublished).

11. U. S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of Dresden, Lincoln County, Maine, December 3, 1976.
12. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Town of Pittston, Kennebec County, Maine, Washington, D. C., March 16, 1981.
13. U. S. Army Corps of Engineers, New England Division, Special Flood Hazard Information Report Kennebec River Maine, Waltham, Massachusetts, November 1975.

EXHIBIT 3 - ELEVATION REFERENCE MARKS

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 1	*	23.150	A C & GS disk stamped "W30 1935" set on top of a concrete post projecting 0.5 feet above ground, located 350 feet south of an underpass, 76 feet south of milepost P 50-V 201, 30 feet south of the center of a road crossing, 22 feet east of the east rail and 1.9 miles south along the Maine Central Railroad from the station at South Gardiner. The reference mark is located in the town of South Gardiner.
RM 2	*	30.892	A standard U.S. Geological Survey disk set vertically in the southwest wall in the south corner of the Post Office located two blocks southeast of the center of the crossing of the Maine Central Railroad and State Route 197. The reference mark is located in the Town of Richmond.
RM 3	05	24.992	A standard tablet stamped "TT 85 NO 1940 25" set in northwest wing wall of the Dresden-Richmond and State Route 197 bridge over the Kennebec River. The reference mark is located in the Town of Richmond.

*Located outside corporate limits; not shown on maps

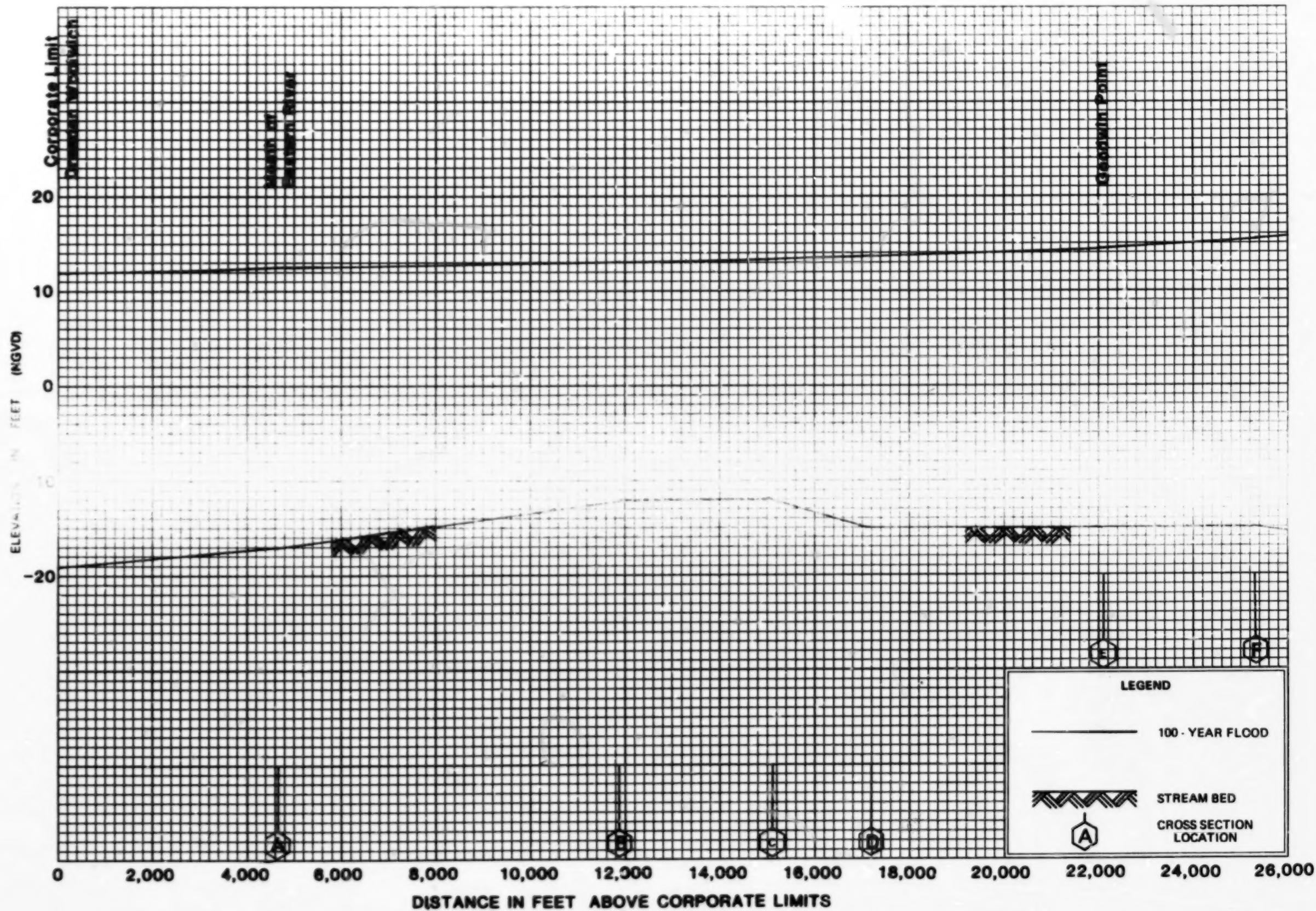
EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 4	05	34.957	A standard disk stamped "V30 1935" set in the top of a concrete post, flush with the ground, 14 feet northeast of a gate post, 29 feet southeast of the southeast rail, 5 poles southwest of signal L474, 9 poles southwest of a side track switch, and 2.7 miles northeast along Maine Central Railroad from Richmond. The reference mark is located in the Town of Richmond.
RM 5	05	32.933	A standard U.S. Geological Survey disk set in the top of a 6" X 6" concrete post stamped "M 51 1935", set flush with ground, 116 feet southeast of junction of State Routes 197 and 27, 28 feet northeast of the centerline of Route 27 and 27 feet west of the northwest corner of the Dresden Community Church in Dresden Mills.
RM 6	05	13.882	A standard C & GS disk stamped "L 51 1935" set in the top of a concrete post projecting 4 inches above ground, 86 feet northeast of a pole, 102 feet east of the centerline of State Route 197, 29 feet north of the centerline of a driveway and 1.2 miles south along State Route 197 from the Post Office at Dresden Mills.

EXHIBIT 3 - ELEVATION REFERENCE MARKS - continued

<u>Reference Mark</u>	<u>FIRM Panel</u>	<u>Elevation (Feet NGVD)</u>	<u>Description of Location</u>
RM 7	05	91.000	A standard U.S. Geological Survey disk stamped "K-51 1935" set in 6" X 6" concrete post projecting 4 inches above ground, 79 feet southeast of the centerline of the intersection of State Routes 197 and 127, 49 feet east of the centerline of Route 127, in a fence line and located two miles east of the Dresden-Richmond bridge over the Kennebec River.
RM 8	*	189.940	A chiseled "X" on top of an 8" X 8" X 20" granite marker, located 6.2 miles south along State Route 27 from the intersection of Routes 27 and 126. This is the Lincoln-Kennebec County line and the Pittston-Dresden town line. The marker is located 40 feet east of the highway at this line. The reference mark is located in the Town of Pittston.

*Located outside corporate limits; not shown on maps



FLOOD PROFILES

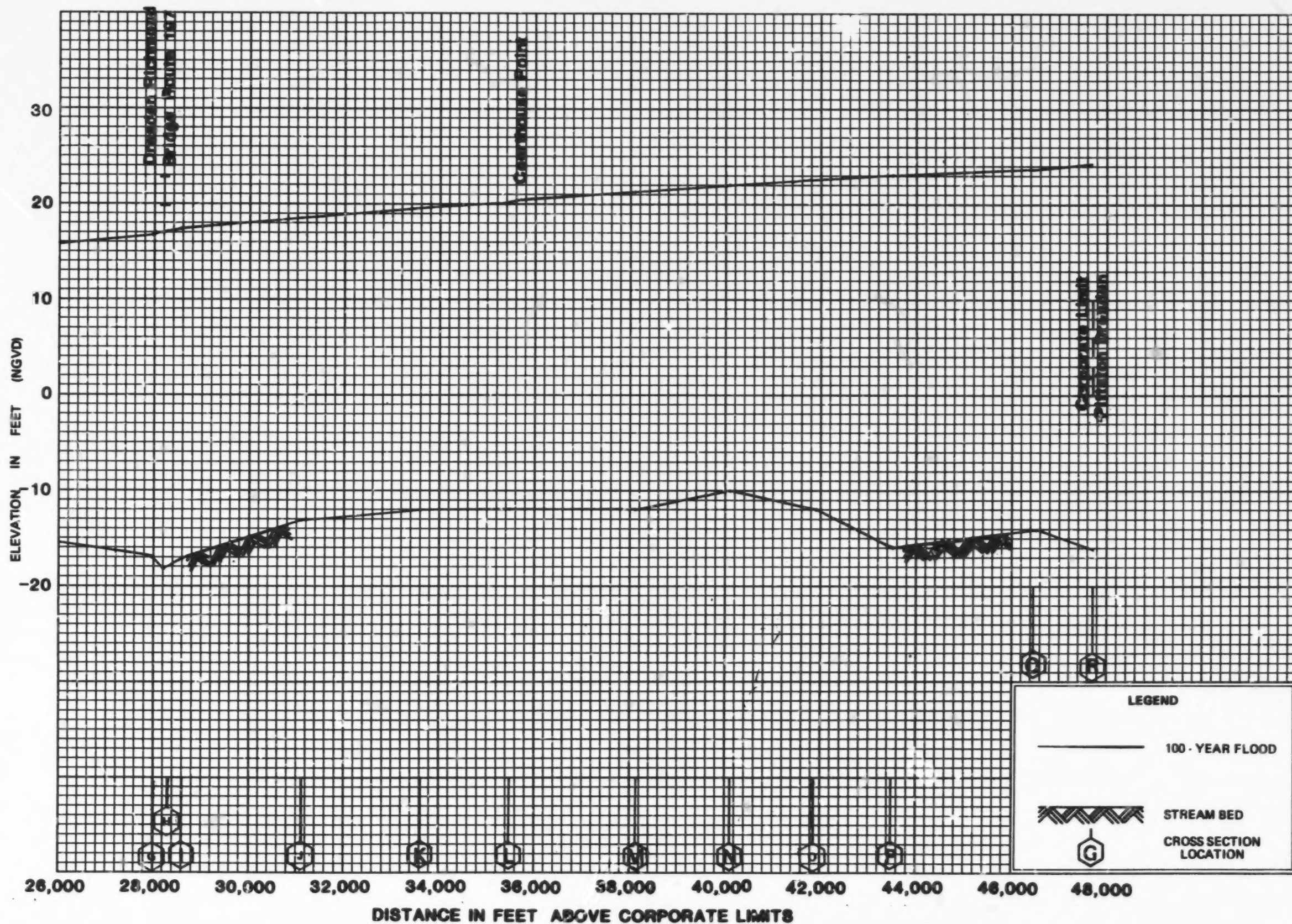
KENNEBEC RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DRESDEN, MAINE
(LINCOLN COUNTY)

01P

BEST COPY AVAILABLE



FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF DRESDEN, MAINE
(LINCOLN COUNTY)

FLOOD PROFILES

KENNEBEC RIVER

02P